IX. FORESTRY

A. General Effectiveness of Existing Forestry Programs and Adequacy for Meeting CZARA Requirements

Comment: The majority of commenters agreed with NOAA and EPA's proposed finding that Oregon's existing forest practices are not sufficient for meeting the CZARA requirements and that additional management measures for forestry are needed. They argued that current land use laws and the Oregon Forest Practices Act (FPA) and rules do not adequately prevent impacts to water quality or designated beneficial uses (e.g., fish spawning, migration, etc.) from forestry activities. (See additional forestry comments for more specific concerns raised about various elements of Oregon's forestry program.)

Several commenters disagreed with language in the FPA that states that compliance with the forest practices rules equates to compliance with water quality standards; the commenters did not believe the FPA practices were sufficient to achieve and maintain water quality standards. Commenters stated that the Oregon Department of Environmental Quality has failed to use its authority to address these inconsistencies between the FPA practices and water quality standards. A commenter asserted that NOAA and EPA failed to use their authority under CZARA to address the issue.

Commenters were concerned that FPA enforcement actions only occur after water quality damage has occurred. A commenter contended that the lack of political will within the state to address water quality problems along with state tax benefits to the timber industry contribute to the lack of resources state agencies have to improve degraded water quality. Commenters recommended NOAA and EPA look at various studies that demonstrate the adverse impacts of the forestry industry on water quality and designated uses in Oregon (see pg. 10-11 of public comment #58 and the attachments to public comment #57 as examples)[1].

Other commenters disagreed with NOAA and EPA's proposed finding and believed Oregon does have programs in place to meet the CZARA forestry requirements and that no additional management measures are needed. For example, commenters stated the FPA "establishes a dynamic program that responds promptly and deliberately to environmental issues as they arise" and requires that water resources, including drinking water, be maintained. They stated that the FPA requires that best management practices be established to ensure maintenance of water quality standards, and that this FPA provision adhered to the CZARA requirement that the state establish additional management measures to maintain applicable water quality standards. The commenters stated that the FPA already requires best management practice monitoring, including for pesticide use and landslides, and that the state has proven processes in place to identify and implement additional management measures for forestry, when needed. They highlighted that past monitoring efforts have resulted in improvements to the forest practices rules, such as strengthening protections for land-slide prone areas when public safety is at risk and making improvements to road management procedures.

In addition, one commenter argued that EPA and NOAA have failed to show that Oregon's forest practices rules do not meet water quality and beneficial use objectives; on the contrary, the commenter asserted that a "large body of science" demonstrates that Oregon forest practices have a "neutral to

[1] http://coastalmanagement.noaa.gov/nonpoint/oregonDocket/publicComments.html

positive" effect on aquatic life. They stated that making a decision that is not backed by solid science would be arbitrary; such a decision would not stand up to judicial scrutiny.

Source: 35-I, 57-D, 57-E, 57-F, 57-G, 57-H, 57-S, 57-V, 57-W, 58-H, 67-E, 67-G, 70-C, 75-E, 75-G, 77-F, 77-G, 77-M, 77-Q, 79-B, 79-C

Response: As reflected in the final findings document, NOAA and EPA continue to find that Oregon has not satisfied the condition placed on its coastal nonpoint program to "identify and begin applying additional management measures where water quality impairments and degradation of beneficial uses attributable to forestry exist despite implementation of the (g) measures." In its 1998 conditional approval findings, NOAA and EPA identified specific areas where existing practices under Oregon's FPA and rules should be strengthened to attain water quality standards and fully support beneficial uses including: better protections for medium and small fish-bearing and non-fish bearing streams, including intermittent streams; better protections for areas at high-risk for landslides; better management and maintenance of forestry roads, including so-called "legacy" roads; and better protections for non-fish bearing streams during the aerial application of herbicides.[2] Based on the comments received, NOAA and EPA have revised the final decisions document to more clearly reference scientific studies that support the need for these additional management measures in the state.

NOAA and EPA recognize that the FPA has language stating that water resources and drinking water must be protected and that the state's monitoring programs for forestry practices have resulted in noteworthy improvements to its FPA rules. Among those improvements are amendments to the FPA rules to require the identification and management of landslide hazard areas that present a risk to public safety. The federal agencies have included language in the decision document that acknowledges these FPA rule improvements. As the final findings document more fully explains, while the state should be commended for these positive achievements, these actions are not enough to satisfy the additional management measure for forestry condition. For example, existing science, including studies like the RipStream Analysis carried out by ODF, show that current FPA riparian protection practices are not sufficient to achieve water quality standards. More improvements are needed to adopt additional management measures to achieve and maintain water quality standards and protect designated uses as CZARA requires under Section 6217(b)(3).

NOAA and EPA disagree with the commenter that stated NOAA and EPA are not using their authority under CZARA to ensure forest practices in Oregon achieve and maintain water quality standards. On the contrary, NOAA and EPA's finding that Oregon has failed to submit a fully approvable coastal nonpoint program because the state has not satisfied its additional management measures for forestry condition, demonstrates that NOAA and EPA are using their authority under CZARA to bring about improvements to Oregon's forest practices.

According to state rule, the best management practices the Board of Forestry (Board) adopts are deemed sufficient for achieving and maintaining water quality standards (ORS 468B.110(2), ORS 527.756, and ORS 527.770). NOAA and EPA recognize that these provisions present some challenges to ODEQ in enforcing water quality standards on forestlands. However, ODEQ does have tools it can use to remove the "best management practices shield" (ORS 527.770) that will allow it to take enforcement action when forestry activities are degrading water quality. The Environmental Quality Commission (EQC), the rule making body for ODEQ, can petition the Board if it believes the FPA rules are not

[2] See conditional approval findings for Oregon's Coastal Nonpoint Program: http://coastalmanagement.noaa.gov/nonpoint/docs/findor.txt

adequate for achieving water quality standards. The Board (with EQC concurrence) can either terminate the review or proceed with rulemaking. If the Board fails to complete its rulemaking in the two-year time period or decides that the revisions are not needed, the "best management practices shield" is lifted. During the rulemaking process, the EQC can also request the Board employ interim steps "to prevent significant damage to beneficial uses." If requested by EQC, the Board has to take action.

Finally, per NOAA and EPA's authority under CZARA, NOAA and EPA cannot comment on Oregon's resource constraints, or how those constraints may affect what contributes to the believed lack of resources in Oregon to address water quality issues. The federal agencies further cannot comment on issues related to and concerns FPA enforcement. In determining the adequacy of the state's coastal nonpoint program, the federal agencies look only at what processes the state has in place to implement the CZARA 6217(g) management measures and weather the state has satisfied the conditions placed on its program. (See response to Comment IV.C (Enforcement) for a more in-depth discussion of the enforcement issue).

B. Importance of Forestry Riparian Management

Comment: Many commenters stated that forest riparian management was an important tool for addressing erosion and water quality problems in coastal watersheds. These commenters believe that water quality problems are exasperated by lack of adequate riparian buffers. One commenter expressed the concern that "large companies with large land holdings" are conducting "dangerous activities" that impact people, wildlife habitats and water quality in the state. The commenter added that such activities should be subject to legal oversight so as to limit pollution being released into waterways. Another commenter pointed out that habitat and water quality indicators overlap, creating the need to fully examine how physical habitat and water quality are interconnected. The commenter added that because "...streams form a linked network, water quality and stream health is closely associated with the intensity and cumulative extent of forest management activities near streams of all sizes, in all parts of the network."

Commenters described a variety of benefits riparian buffers provide. A few commenters emphasized the negative impacts that can occur due to clear cutting and not providing sufficient riparian buffers, such as increased soil erosion, increased stream temperature, and lack of pesticide filtration. One commenter cited degraded lakes within the Sutton, Mercer, Woahink, and Siltcoos watersheds where clear cutting to the shores has occurred. Other commenters discussed the effects of winter blow downs where "strong coastal winds accelerate through the clear cuts and abruptly hit the [stream] buffers with great force." The commenter stated that narrow, inadequate buffers are not able to stand up to these winds, subjecting trees to windthrow. The commenter contends that a lack of standing trees affects soil stability, ultimately resulting in runoff that can impact water quality.

Commenters also pointed out the importance of riparian buffers in maintaining large woody debris (LWD). They stated large wood recruitment is essential to maintain biological and hydrological processes in streams (e.g., sediment retention and transport, habitat formation, substrate for biological activity) and is critical for salmonid populations. A commenter described how in a natural stream/riparian system, large wood is recruited from areas adjacent to streams and upslope, including unstable areas that move down toward streams. Moreover, the commenter noted that large wood was not just needed instream but also adjacent to the stream to support terrestrial processes. Another commenter noted that older forests and intact riparian areas, as well as large shifting beaver complexes contribute LWD to streams and help to maintain floodplains, habitat complexity, hyporheic flow, and hydrologic stability. However, the commenter explained, management of coastal lands has resulted in chronic and persistent

disturbance and bare riparian areas along the lower reaches of coastal streams. This has led to low LWD, unstable banks, and high energy channels.

Other commenters explained the importance of riparian buffers for controlling sedimentation into streams. A commenter pointed out that if riparian buffers are not required for non-fish bearing streams (headwaters), those streams become a source of excess sediment to networked fish-bearing channels as sediment is transported downstream, essentially decreasing or eliminating the effectiveness of riparian management zones in maintaining low turbidity at a watershed scale. The commenter also described that erosion and sedimentation contributes to losses in channel depth, the frequency and quality of pools, and off-channel habitat critical for fish rearing. Another commenter noted the need for regular dredging of the port at Brandon and other coastal facilities due to siltation caused by upstream erosion.

In addition, commenters stated that increased sediment delivery and lack of LWD recruitment impacts designated uses, such as salmonids and drinking water. Commenters explained how increased sedimentation contributes to increased levels of fine sediment, increased turbidity that can impair salmonid sight feeding and cause gill damage. Another commenter discussed how increased sediment delivery can contribute to increased water temperatures. Others pointed out the role forest riparian buffers play in maintaining healthy drinking water by filtering sediments, pesticides, and other pollutants from the water. One commenter noted that even where narrow buffers exist along river shores (e.g., the Siletz River), there are places where the forest buffer has been eliminated completely and streams that flow into the Siletz have no buffer zone at all.

Finally, a commenter also stated that large stream buffers play an important role in storing additional carbon and reducing greenhouse gas emissions.

Sources: 15-E-1, 15-F-1, 15-F-2, 28-B-1, 30-K-1, 35-J-1, 42-D-2, 45-AAA, 56-D-1, 56-D-2, 57-BBB, 57-DDD, 57-EEE, 58-B-1, 58-E-1, 58-E-3, 58-E-4, 58-H-2, 58-H-6, 75-I

Response: NOAA and EPA recognize the importance of riparian buffers along Oregon streams, including both small and medium fish-bearing streams and non-fish bearing streams. The federal agencies continue to find that Oregon's existing riparian management practices are not sufficient to protect water quality and designated uses from nonpoint source pollution related to forestry practices. The state still needs to adopt additional management measures to provide greater protection of forest riparian areas before NOAA and EPA can find that the state has fully satisfied its coastal nonpoint program requirements under CZARA.

NOAA and EPA revised the final findings document for Oregon's Coastal Nonpoint Program to include additional scientific information about the importance of riparian areas. As discussed in the findings document, riparian buffers play an important role in shading streams to maintain cold water needed for salmon. In the findings document, NOAA and EPA acknowledge that the Board of Forestry has been considering a rule change that would provide greater protections to small and medium fish bearing streams. This is an important step forward and NOAA and EPA encourage the state to complete the rulemaking expeditiously. NOAA and EPA also recognize that the rule change, if successful, will likely not address non-fish bearing streams and that the state also should protect riparian areas along these streams as well.

C. Forestry Riparian Management Accomplishments

Comment: Speaking to the accomplishments of Oregon's coastal nonpoint program as it relates to forestry-riparian management, some commenters emphasized their support for Oregon's existing rules and programs in place to manage the forest industry and maintain water quality and riparian protections. One commenter pointed out that Oregon's Department of Forestry works to strengthen forest rules for riparian protection but faces political challenges that require "thoughtful science". The commenter noted the importance of maintaining the forest industry's support for water quality protection and acknowledged this process will take longer than Spring 2014.

Another commenter, on behalf of various groups, noted that private landowners, foresters, and loggers all support the Oregon Forest Practices Act and believe there is a high level compliance with the rules. Another group called attention to Oregon's fifteen plus years of "superior voluntary riparian watershed enhancement accomplishments" by the forest sector. That group contends that EPA and NOAA's restrictions would "stifle these valuable watershed improvements." Lastly, another group noted how Oregon's Department of Forestry has been doing good work to improve water quality and riparian habitat.

Sources: 14-D, 77-AAA, 79-D, 82-B

Response: Currently Oregon relies on both regulatory and voluntary measures to provide riparian protections for fish bearing streams and non-fish bearing streams. While these practices are better than having no protections in place, as discussed more fully in the final findings document, the results of a number a studies show that Oregon's current riparian protection practices are not adequate not adequate to prevent sediment and temperature impacts to water quality and fully support beneficial uses. Having broad-based support for Oregon's Coastal Nonpoint Program, including from the forest industry, will help contribute to the program's success. A broad body of science supports the position that changes must be made to the state's existing forestry riparian practices to achieve and maintain water quality standards.

NOAA and EPA recognize the political challenges the state faces as it considers a change to the FPA rules to provide greater riparian protection of fish-bearing streams and the importance of good science to support a rule change. In order to support the state's decision making process, NOAA and EPA experts have reviewed the literature for quality and relevance and have testified in front of the Board of Forestry to ensure that the Board is aware of and understands key studies. Both agencies stand ready to continue to assist the state, as needed, as it moves forward with the rule change.

Although the federal agencies understand a rule change takes time, NOAA and EPA cannot further delay a final finding on Oregon's Coastal Nonpoint Program. NOAA and EPA have already provided Oregon sufficient time to develop a fully approvable coastal nonpoint program. Per a settlement agreement with the Northwest Environmental Advocates, the federal agencies must make a final finding by May 15, 2014, (subsequently extended to January 30, 2015, by mutual agreement of the settlement agreement parties), regarding whether or not Oregon has failed to submit an approved (without conditions) coastal nonpoint program. NOAA and EPA arrived at this timeline based on the original commitment Oregon made in a letter to NOAA and EPA dated July 26, 2010, that the state would address its remaining conditions by March 2013.

D. Adequacy of Forestry Riparian Management for Protecting Small, Medium Fish-Bearing Streams and Non Fish-Bearing Streams

Comment: Many commenters expressed the opinion that Oregon's existing riparian management practices and forestry laws are inadequate to protect small and medium fish-bearing and non-fish bearing streams. Commenters focused on the use of no-harvest buffers, noting that small and medium streams receive minimal buffering (i.e., 20 feet) and small non-fish streams receive no buffering (excepting equipment exclusion). One commenter reasoned that because riparian buffers are not required for small non-fish bearing streams, they become a source of sediment for connected fish-bearing channels thus compromising the effectiveness of the overall system of riparian management in maintaining sufficiently low turbidity.

Commenters stated that the Oregon Forest Practices Act and other comparable forest practices have been widely criticized for failing to protect water quality and salmonid habitat (and provided examples of such failures related to inadequate shade, poor large wood recruitment, lack of tributary protection, and unstable slopes). They also stated that Oregon's forestry riparian protection standards lag behind those of their neighboring states, such as Washington and California. Commenters pointed to the National Marine Fisheries Services' determination that the Oregon Forestry Practices Act does not have rules in place to adequately protect coho salmon habitat. Commenters believe that the FPA does not provide for the production and introduction of necessary large woody debris to medium, small, and non-fish bearing streams and that any required buffers under the rules are inadequate to prevent significant stream warming.

A white paper analyzing the proposed Oregon and California Railroad Grant Land Trust, Conservation, and Jobs Act was cited by one commenter as providing evidence of the need for more stringent programs to protect water quality in Oregon's coastal zone. A concern was raised that even where narrow buffer zones exist along river shores there are areas where those buffers have been eliminated. The claim was also made that the Board of Forestry has not shown any intent to provide riparian protection for non-fish bearing streams, which make up the majority of coastal stream miles and flow into fish bearing streams.

A commenter discussed how restoring and maintaining productive aquatic habitat does not appear to be a common stated objective of Oregon programs that influence the management and use of riparian areas. That commenter went on to say that riparian corridors, managed according to Oregon's rules, have been significantly degraded across large portions of the state's landscape. Other comments pointed to the RipStream study findings as evidence that the existing FPA buffers do not achieve compliance with water quality standards and the Clean Water Act.

Other comments focused on other weaknesses in Oregon's existing FPA rules. For example, the rules do not protect non-perennial (intermittent) streams, which are determined "by the State Forester based on a reasonable expectation that the stream will not have summer surface flow after July 15." The commenter also raised issue with the lack of required riparian management for seeps and springs.

A few commenters believe Oregon's existing Forest Practices Act and rules, combined with its voluntary efforts, are adequate to protect forest riparian areas. One commenter stated the Forest Practices Act and rules do provide the minimum requirement for developing large mature trees that can contribute woody debris to streams. They also asserted that voluntary efforts, such as discretionary placement of additional wood in the stream, help to further create large wood debris habitat that salmon need. In addition, they discussed other new voluntary practices that are being implemented among the forest

industry, such as the retention of additional leave trees in near-stream areas, and targeted restoration of high-priority riparian areas that are lacking woody debris.

These commenters cited results from several recent Watershed Research Cooperative (WRC) studies to support their position that Oregon's existing forest riparian management is adequate. For example, they state that that two of the three WRC studies indicate a positive fish response following timber harvest. They also note that the Hinkle Creek WRC study found that small debris provides shade to non-fish bearing streams.

In addition, a couple of commenters criticized NOAA and EPA for relying on much older studies, such as ODF's 1999 RipStream study and the 2002 ODF and DEQ Sufficiency Analysis, to support the federal agencies' claim that Oregon needs greater protection of its small and medium fish-bearing streams and non-fish bearing streams. They stated NOAA and EPA should have considered newer, more relevant research, such as the WRC studies. In addition, one commenter felt NOAA and EPA misinterpreted the RipStream study findings. They believe NOAA and EPA's description of the study's findings on page 8 in the proposed findings document did not align with the actual conclusions of the report.

One commenter also reflected that the criticism of the existing FPA rules should be tempered against the evolving science and understanding of forest riparian management. They cite how former beliefs that stream cleaning (large wood removal) was needed to improve instream fish habitat and increase dissolved oxygen, has now evolved to an understanding that large woody debris is needed to achieve these goals. In addition, the commenter states that while there used to be an emphasis on retaining large conifers along streams, that thinking has now shifted to reflect a new understanding of the benefits of riparian hardwoods and the importance of diversity in tree species within the riparian zone.

Sources: 15-G-2, 28-B-1, 30-K-1, 43-BBB, 55-P, 56-D-2, 56-E-1, 56-E-2, 56-E-3, 57-AAA, 57-BBB, 58-E-2, 58-H-1, 58-H-3, 58-H-4, 58-H-5, 67-D1, 67-D-2, 75-H, 77-H. 77-I, 77-BBB, 77-CCC, 77-DDD, 79-E, 79-G

Response: NOAA and EPA continue to find that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. As discussed in more detail in the final findings document for Oregon's Coastal Nonpoint Program, there is a wealth of science, including the 2011 RipStream study, that shows that Oregon's existing FPA riparian protection practices on private forest lands in the Oregon Coast Range, are not sufficient for meeting the cold water protection criteria for the state's temperature water quality standard.

The EPA and NOAA appreciate the effort that has gone into conducting the paired watershed studies under the WRC. However, because the WRC results are preliminary and have not yet gone through a robust peer review process, the federal agencies do not believe they are appropriate to reference at this time. Further, as NOAA and EPA discuss more fully in the final findings document, NOAA and EPA's review of the WRC studies found that the variation in stream temperature and the net decrease in stream temperature observed by the WRC studies downstream of harvest sites may be attributable to factors outside of the scope of those studies (such as increased slash debris along the stream after harvest and increased stream flow post-harvest). DEQ also evaluated the WRC study results and concluded that the stream temperature responses observed downstream of the Hinkle Creek and Alsea River harvest sites are similar to the downstream temperature responses observed under the RipStream study. Therefore, as stated in the final decision document, there may be other factors at play that make it difficult to draw any definitive conclusions about the adequacy of the FPA practices from the WRC paired watershed study results.

NOAA and EPA do not believe the federal agencies have misinterpreted the RipStream study in the proposed findings document. In the proposed findings, NOAA and EPA stated,

> "A significant body of science, including: 1) the Oregon Department of Forestry's (ODF) Riparian and Stream Temperature Effectiveness Monitoring Project (RipStream)…continues to document the need for greater riparian protection around small and medium streams and non-fish bearing streams in Oregon. In its July 1, 2013, submission to the federal agencies, Oregon cited the RipStream study and acknowledged that there was evidence that forest practices conducted under the State's existing Forest Practices Act (FPA) rules do not ensure forest operations meet the State water quality standards for protecting cold water in small and medium fish bearing streams."

While NOAA and EPA did not specify which RipStream study they were referring to in the body of the proposed findings, the References section at the end of the document does provide the full citation for the three RipStream studies, one published in 2008 and two published in 2011. These RipStream studies assessed how the FPA's existing riparian protection practices affected stream temperature. In their RipStream publication, Groom et. al. (2011a) found that there was a "40.1% probability that a preharvest to postharvest comparison of 2 years of data will detect a temperature increase of >0.3 ºC". The state's stream temperature anti-gradation standard says that water temperatures cannot increase more than 0.3 ºC. Therefore, the researchers concluded that "[stream temperature] anti-degradation [standard] compliance may be a problem on private forestry lands in the Oregon Coast Range."[3]

The statements NOAA and EPA made in the proposed findings document about the RipStream study align with this conclusion. To address any apparent confusion regarding the federal agencies' interpretation of the RipStream study, NOAA and EPA have revised the final findings for Oregon's Coastal Nonpoint Program to further clarify the discussion of the RipStream study to include an in-text citations for the RipStream studies and provide a more in-depth discussion of the study's results.

NOAA and EPA agree that the science around riparian buffer protection is evolving. NOAA and EPA continue to welcome and support scientifically rigorous studies to evaluate the effectiveness of forest practices designed to protect water quality and designated uses. The federal agencies are also committed to investigating alternative approaches that will provide greater protection, when warranted. The fact that science will continue to evolve should not prevent Oregon from taking action to provide better riparian protection when the current science clearly shows that the state's existing FPA practices are not meeting the protection of cold water criterion for the temperature standard. Employing a nimble adaptive management approach that allows the state to make adjustments and to identify when additional management measures are needed based on current science, is a core component of a state's coastal nonpoint program (See Section 6217(b)).

As a few commenters noted, Oregon's riparian protection standards for small and medium fish-bearing streams and non-fish bearing streams are not as strong as those for neighboring states like Washington and California. CZARA gives states the flexibility to develop a program that best meets their unique needs. Therefore, while Oregon does not have to adopt the same standards as its neighbors, NOAA and EPA encourage Oregon to look to Washington and California as potential models for the types of riparian protection practices it may wish to consider. These practices have already been instituted by

[3] Groom, J.D., L. Dent, and L.J. Madsen. 2011. Stream temperature change detection for state and private forests in the Oregon Coast Range. Water Resources Research 47: W01501, doi:10.1029/2009WR009061.

the forest industry in Washington and California which have had to contend with similar topographies, weather conditions, and sensitive species.

Finally, NOAA and EPA note that one commenter expressed concern that in some areas, even Oregon's current FPA buffer requirements were not being followed. While that may be the case, that is an enforcement issue. Under CZARA, how well a state is enforcing its existing policies and programs is not considered for coastal nonpoint program approval. (See the response to Section VI.C, Enforcement, for a fuller explanation).

E. Greater Protection of Forestry Riparian Areas Needed

Comment: Several commenters stated that Oregon needs to provide greater protection for forest riparian areas along both fish and non-fish bearing streams. One commenter provided several examples of recommended buffer widths that the state may wish to adopt. For example, they mentioned that NMFS recommends no-cut riparian buffers ranging from 150-300 feet in width to protect salmonids. The larger buffer widths are for fish-bearing streams, while the smaller widths are more suitable for non-fish bearing streams. The commenter also stated the Northwest Forest Plan recommends similar buffer widths (300 foot no-cut buffers along fish-bearing streams and 150 foot no-cut buffers along non-fish bearing streams). The commenters stated that wider riparian buffers would ensure large wood recruitment, improve sediment and pesticide filtration, and provide sufficient tree basal area within the riparian zone to shade streams and protect cold water needed for salmon. As one commenter also asserted, the larger buffers would also provide greater protection from blow downs and ensure that if a few trees are blown down, enough would remain to still provide a functioning buffer.

In addition to greater protection of forestry riparian areas, commenters stated that riparian restoration was needed. They highlighted the important role large downed trees, or nurse trees, play in forest regeneration.

One commenter did express concern with adopting riparian buffers similar to the Northwest Forest Plan. They stated that when the Bureau of Land Management adopted the plan's buffers, it limited the amount of timber that could be harvested. The new buffer requirements necessitated three landings and two more harvest units to harvest the same amount of timber that used to be done with one landing. The commenter concluded that more restrictive riparian buffers can lead to greater ground disturbance.

Sources: 20-B-1, 30-K-1, 48-I, 55-N, 56-E, 56-E-1, 56-E-2, 57-E-3, 58-E-4

Response: NOAA and EPA agree that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. In the final findings document, the federal agencies acknowledge the Board of Forestry's ongoing rulemaking process that is considering improvements to the FPA riparian protections for small and medium fish-bearing streams. This rule may help the state provide some of the protection needed. NOAA and EPA encourage the state to complete those rule changes as expeditiously as possible.

NOAA and EPA appreciate the recommended buffer widths commenters provided and will be sure to share these suggestions with the state for its consideration. CZARA does not require states to adopt specific buffer widths to have a fully approved coastal nonpoint program. Rather, the state has the flexibility to identify the type of buffer protection that works for them yet still will enable them to achieve and maintain water quality standards. NOAA and EPA continue to work with Oregon to make sure the state has a good programs and processes in place to provide the riparian protection needed.

With regard to the comment about greater ground disturbance resulting from the application of Northwest Forest Plan buffers, NOAA and EPA refer to the most recent report by the Northwest Forest Plan Aquatic Riparian Effectiveness Monitoring Program.[4] That report finds that 69 percent of watersheds are demonstrating a positive change in condition, and that almost all negative watershed condition scores within the Plan area are associated with fire (not harvest).

Finally, EPA and NOAA are supportive of Oregon's efforts under the Oregon Watershed Enhancement Board and other programs to restore forested riparian areas through voluntary activities and other means. The federal agencies believe these voluntary measures will complement and augment a fully approvable coastal nonpoint program.

F. Impacts of Strict Forestry Riparian Protection

Comment: A couple of commenters expressed concern about the impacts stricter riparian management would have on forestry operations. One commenter felt requirements for larger riparian buffer widths would only hurt the logging industry and drive up the price of lumber. Another commenter stated that any EPA and NOAA-proposed restrictions would limit the ability of private forest landowners to invest in watershed restoration efforts, including enhancements to forestry riparian areas. They felt additional restrictions would smother the forest sector's cooperative stewardship ethic and long history of voluntarily adopting good riparian management and other forest stewardship practices.

Sources: 20-B, 79-D, 79-F

Response: NOAA and EPA recognize that wider no-cut riparian buffer requirements and strengthening other riparian management practices may slightly reduce the number of harvestable trees available to the timber industry in Oregon. However, many of the timber companies currently operating in Oregon are also successfully operating in Washington and California—states that have stronger riparian protection requirements in place. The timber industry in those states is complying with those riparian protection requirements, and in some cases exceeding those requirements by adopting additional voluntary practices and working with partners on watershed restoration activities.

Therefore, NOAA and EPA do not believe increasing buffer requirements within Oregon's coastal nonpoint management area will have a significant impact to the forestry industry in Oregon. Also, with more robust riparian protections in place, water quality would be protected before damage occurs that would necessitate restoration. As a result, industry may be able to spend less on watershed restoration efforts, since it is typically more cost-effective to protect an area than to restore a degraded one.

G. Flexibility for Forestry Riparian Management Needed, Including Use of Voluntary, Incentive-Based Approaches

Comment: Rather than relying on strict regulatory approaches to better protect riparian areas on forest land, a few commenters advocated for more flexible, voluntary, and incentive-based approaches. The commenters recognized more could be done to protect riparian buffers, and thus water quality, salmon and other designated uses. However, they felt additional incentive-based approaches, combined with the existing Forest Practices Act rules, would be the best way to provide these additional protections and facilitate long-term wood recruitment and shade to support high-quality salmon habitat. Voluntary

[4] Lanigan, Steven H.; Gordon, Sean N.; Eldred, Peter; Isley, Mark; Wilcox, Steve; Moyer, Chris; Andersen, Heidi. 2012. Northwest Forest Plan-the first 15 years (1994-2008): watershed condition status and trend. Gen. Tech. Rep. PNW-GTR-856. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 155 p.

practices they recommended included the retention of additional leave trees near fish-bearing streams, the placement of large woody debris in streams, planting trees and other riparian restoration activities, and thinning riparian forests to levels that promote primary production in streams and the adjacent understory (primary production being important for salmon populations).

Sources: 75-F, 77-CCC, 79-D, 79-F

Response: NOAA and EPA understand and respect the need for states to be able to use flexible approaches in developing and implementing their coastal nonpoint programs. CZARA requires management measures to be backed by enforceable authorities. As NOAA and EPA describe in the *1998 Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance for Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990,*[5] this can either be through direct enforcement authority or through voluntary efforts, backed by enforceable authorities. If states chose a voluntary approach, as the guidance outlines, that states not only must provide a description of their voluntary programs but also meet other requirements including: (1) providing a legal opinion asserting they have suitable back-up authorities and demonstrating a commitment to use the back-up authority, when necessary; and (2) have program in place to monitor and track implementation of the voluntary program. Voluntary programs could play an important role in Oregon's Coastal Nonpoint Program, however, the state has not fully described its voluntary programs for forestry riparian protection or satisfied the other requirements needed to use voluntary programs to meet part of their CZARA 6217(g) management measure requirements.

H. Forestry Landslide Management

Comment: Some commenters acknowledged that landslides caused by logging practices, such as clear cutting on steep slopes, are a real problem in Oregon and additional management measures are necessary to address these impacts. It was noted that Oregon does not have sufficient programs to reduce landslide risk and control nonpoint pollution due to logging on private lands.

Others expressed their disagreement with the federal agencies' proposed finding and argued that the evidence provided by the federal entities was misleading, only focusing on "landslide density relationships" rather than considering the "total number of landslides triggered during major storms". If consider the latter, one would see that the "potential increases in sediment delivery to public resources from landslides...is proportionally small". It was recommended that EPA consider a broader scale view over longer timeframes to evaluate whether water quality and designated uses are impaired. In addition, it was argued that EPA has not offered objective evidence that additional management measures are needed to maintain water quality; the federal agencies have not produced any evidence that landslides resulting from forest management activities have caused exceedances in water quality or negatively impacted aquatic life.

Source: 61-A, 63-B, 67-B, 77-J, 77-K, 77-L

Response: NOAA and EPA continue to find that Oregon needs to do more to protect high-risk landslide areas from logging activities to ensure water quality and designated uses are not impaired. Based on the comments received, NOAA and EPA have revised the rationale in the final findings document to provide more specific scientific evidence to show the link between timber harvesting and landslide risk and how landslides increase sediment loads to nearby streams.

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[5] http://coastalmanagement.noaa.gov/nonpoint/docs/6217adminchanges.pdf

NOAA and EPA disagree that a wider landscape-scale approach to assessing landslide impacts would be appropriate. While the effects of a single landslide may be diluted when a landscape scale view is taken, the impact to a specific stream reach (or reaches), and the designated uses of that stream, are real and can be significant. It is still important to capture and consider these impacts when planning harvest activities so that landslide risks that can impair waterbodies can be minimized.

IX. FORESTRY

A. General Effectiveness of Existing Forestry Programs and Adequacy for Meeting CZARA Requirements

Comment: The majority of commenters agreed with NOAA and EPA's proposed finding that Oregon's existing forest practices are not sufficient for meeting the CZARA requirements and that additional management measures for forestry are needed. They argued that current land use laws and the Oregon Forest Practices Act (FPA) and rules do not adequately prevent impacts to water quality or designated beneficial uses (e.g., fish spawning, migration, etc.) from forestry activities. (See additional forestry comments for more specific concerns raised about various elements of Oregon's forestry program.)

Comment [PE1]: I'm concerned that people may misinterpret words like "majority" or "minority", or even "many", "some" or "few", "several" or "one" seem ok, but may not even be necessary. Just commenter or commenters could be enough.

Some words, or espec ially the word "majority", could imply that there is a democratic element to this decision process, but I haven't seen information suggesting that EPA's CZARA decision depends on any kind of voting.

Several commenters disagreed with language in the FPA that states that compliance with the forest practices rules equates to compliance with water quality standards; the commenters did not believe the FPA practices were sufficient to achieve and maintain water quality standards. Commenters stated that the Oregon Department of Environmental Quality has failed to use its authority to address these inconsistencies between the FPA practices and water quality standards. A commenter asserted that NOAA and EPA failed to use their authority under CZARA to address the issue.

Commenters were concerned that FPA enforcement actions only occur after water quality damage has occurred. A commenter contended that the lack of political will within the state to address water quality problems along with state tax benefits to the timber industry contribute to the lack of resources state agencies have to improve degraded water quality. Commenters recommended NOAA and EPA look at various studies that demonstrate the adverse impacts of the forestry industry on water quality and designated uses in Oregon (see pg. 10-11 of public comment #58 and the attachments to public comment #57 as examples)[1].

Other commenters disagreed with NOAA and EPA's proposed finding and believed Oregon does have programs in place to meet the CZARA forestry requirements and that no additional management measures are needed. For example, commenters stated the FPA "establishes a dynamic program that responds promptly and deliberately to environmental issues as they arise" and requires that water resources, including drinking water, be maintained. They stated that the FPA requires that best management practices be established to ensure maintenance of water quality standards, and that this FPA provision adhered to the CZARA requirement that the state establish additional management measures to maintain applicable water quality standards. The commenters stated that the FPA already requires best management practice monitoring, including for pesticide use and landslides, and that the state has proven processes in place to identify and implement additional management measures for forestry, when needed. They highlighted that past monitoring efforts have resulted in improvements to the forest practices rules, such as strengthening protections for land-slide prone areas when public safety is at risk and making improvements to road management procedures.

In addition, one commenter argued that EPA and NOAA have failed to show that Oregon's forest practices rules do not meet water quality and beneficial use objectives; on the contrary, the commenter asserted that a "large body of science" demonstrates that Oregon forest practices have a "neutral to

[1] http://coastalmanagement.noaa.gov/nonpoint/oregonDocket/publicComments.html

positive" effect on aquatic life. They stated that making a decision that is not backed by solid science would be arbitrary; such a decision would not stand up to judicial scrutiny.

Source: 35-I, 57-D, 57-E, 57-F, 57-G, 57-H, 57-S, 57-V, 57-W, 58-H, 67-E, 67-G, 70-C, 75-E, 75-G, 77-F, 77-G, 77-M, 77-Q, 79-B, 79-C

Response: As reflected in the final findings document, NOAA and EPA continue to find that Oregon has not satisfied the condition placed on its coastal nonpoint program to "identify and begin applying additional management measures where water quality impairments and degradation of beneficial uses attributable to forestry exist despite implementation of the (g) measures." In its 1998 conditional approval findings, NOAA and EPA identified specific areas where existing practices under Oregon's FPA and rules should be strengthened to attain water quality standards and fully support beneficial uses including: better protections for medium and small fish-bearing and non-fish bearing streams, including intermittent streams; better protections for areas at high-risk for landslides; better management and maintenance of forestry roads, including so-called "legacy" roads; and better protections for non-fish bearing streams during the aerial application of herbicides.[2] Based on the comments received, NOAA and EPA have revised the final decisions document to more clearly reference scientific studies that support the need for these additional management measures in the state.

NOAA and EPA recognize that the FPA has language stating that water resources and drinking water must be protected and that the state's monitoring programs for forestry practices have resulted in noteworthy improvements to its FPA rules. Among those improvements are amendments to the FPA rules to require the identification and management of landslide hazard areas that present a risk to public safety. The federal agencies have included language in the decision document that acknowledges these FPA rule improvements. As the final findings document more fully explains, while the state should be commended for these positive achievements, these actions are not enough to satisfy the additional management measure for forestry condition. For example, existing science, including studies like the RipStream Analysis carried out by ODF, show that current FPA riparian protection practices are not sufficient to achieve water quality standards. More improvements are needed to adopt additional management measures to achieve and maintain water quality standards and protect designated uses as CZARA requires under Section 6217(b)(3).

NOAA and EPA disagree with the commenter that stated NOAA and EPA are not using their authority under CZARA to ensure forest practices in Oregon achieve and maintain water quality standards. On the contrary, NOAA and EPA's finding that Oregon has failed to submit a fully approvable coastal nonpoint program because the state has not satisfied its additional management measures for forestry condition, demonstrates that NOAA and EPA are using their authority under CZARA to bring about improvements to Oregon's forest practices.

According to state rule, the best management practices the Board of Forestry (Board) adopts are deemed sufficient for achieving and maintaining water quality standards (ORS 468B.110(2), ORS 527.756, and ORS 527.770). NOAA and EPA recognize that these provisions present some challenges to ODEQ in enforcing water quality standards on forestlands. However, ODEQ does have tools it can use to remove the "best management practices shield" (ORS 527.770) that will allow it to take enforcement action when forestry activities are degrading water quality. The Environmental Quality Commission (EQC), the rule making body for ODEQ, can petition the Board if it believes the FPA rules are not

[2] See conditional approval findings for Oregon's Coastal Nonpoint Program: http://coastalmanagement.noaa.gov/nonpoint/docs/findor.txt

adequate for achieving water quality standards. The Board (with EQC concurrence) can either terminate the review or proceed with rulemaking. If the Board fails to complete its rulemaking in the two-year time period or decides that the revisions are not needed, the "best management practices shield" is lifted. During the rulemaking process, the EQC can also request the Board employ interim steps "to prevent significant damage to beneficial uses." If requested by EQC, the Board has to take action.

Finally, per NOAA and EPA's authority under CZARA, NOAA and EPA cannot comment on Oregon's resource constraints, or how those constraints may affect what contributes to the believed lack of resources in Oregon to address water quality issues. The federal agencies further cannot comment on issues related to and concerns FPA enforcement. In determining the adequacy of the state's coastal nonpoint program, the federal agencies look only at what processes the state has in place to implement the CZARA 6217(g) management measures and weather the state has satisfied the conditions placed on its program. (See response to Comment IV.C (Enforcement) for a more in-depth discussion of the enforcement issue).

B. Importance of Forestry Riparian Management

Comment: Many commenters stated that forest riparian management was an important tool for addressing erosion and water quality problems in coastal watersheds. These commenters believe that water quality problems are exasperated by lack of adequate riparian buffers. One commenter expressed the concern that "large companies with large land holdings" are conducting "dangerous activities" that impact people, wildlife habitats and water quality in the state. The commenter added that such activities should be subject to legal oversight so as to limit pollution being released into waterways. Another commenter pointed out that habitat and water quality indicators overlap, creating the need to fully examine how physical habitat and water quality are interconnected. The commenter added that because "…streams form a linked network, water quality and stream health is closely associated with the intensity and cumulative extent of forest management activities near streams of all sizes, in all parts of the network."

Commenters described a variety of benefits riparian buffers provide. A few commenters emphasized the negative impacts that can occur due to clear cutting and not providing sufficient riparian buffers, such as increased soil erosion, increased stream temperature, and lack of pesticide filtration. One commenter cited degraded lakes within the Sutton, Mercer, Woahink, and Siltcoos watersheds where clear cutting to the shores has occurred. Other commenters discussed the effects of winter blow downs where "strong coastal winds accelerate through the clear cuts and abruptly hit the [stream] buffers with great force." The commenter stated that narrow, inadequate buffers are not able to stand up to these winds, subjecting trees to windthrow. The commenter contends that a lack of standing trees affects soil stability, ultimately resulting in runoff that can impact water quality.

Commenters also pointed out the importance of riparian buffers in maintaining large woody debris (LWD). They stated large wood recruitment is essential to maintain biological and hydrological processes in streams (e.g., sediment retention and transport, habitat formation, substrate for biological activity) and is critical for salmonid populations. A commenter described how in a natural stream/riparian system, large wood is recruited from areas adjacent to streams and upslope, including unstable areas that move down toward streams. Moreover, the commenter noted that large wood was not just needed instream but also adjacent to the stream to support terrestrial processes. Another commenter noted that older forests and intact riparian areas, as well as large shifting beaver complexes contribute LWD to streams and help to maintain floodplains, habitat complexity, hyporheic flow, and hydrologic stability. However, the commenter explained, management of coastal lands has resulted in chronic and persistent

disturbance and bare riparian areas along the lower reaches of coastal streams. This has led to low LWD, unstable banks, and high energy channels.

Other commenters explained the importance of riparian buffers for controlling sedimentation into streams. A commenter pointed out that if riparian buffers are not required for non-fish bearing streams (headwaters), those streams become a source of excess sediment to networked fish-bearing channels as sediment is transported downstream, essentially decreasing or eliminating the effectiveness of riparian management zones in maintaining low turbidity at a watershed scale. The commenter also described that erosion and sedimentation contributes to losses in channel depth, the frequency and quality of pools, and off-channel habitat critical for fish rearing. Another commenter noted the need for regular dredging of the port at Brandon and other coastal facilities due to siltation caused by upstream erosion.

In addition, commenters stated that increased sediment delivery and lack of LWD recruitment impacts designated uses, such as salmonids and drinking water. Commenters explained how increased sedimentation contributes to increased levels of fine sediment, increased turbidity that can impair salmonid sight feeding and cause gill damage. Another commenter discussed how increased sediment delivery can contribute to increased water temperatures. Others pointed out the role forest riparian buffers play in maintaining healthy drinking water by filtering sediments, pesticides, and other pollutants from the water. One commenter noted that even where narrow buffers exist along river shores (e.g., the Siletz River), there are places where the forest buffer has been eliminated completely and streams that flow into the Siletz have no buffer zone at all.

Finally, a commenter also stated that large stream buffers play an important role in storing additional carbon and reducing greenhouse gas emissions.

Sources: 15-E-1, 15-F-1, 15-F-2, 28-B-1, 30-K-1, 35-J-1, 42-D-2, 45-AAA, 56-D-1, 56-D-2, 57-BBB, 57-DDD, 57-EEE, 58-B-1, 58-E-1, 58-E-3, 58-E-4, 58-H-2, 58-H-6, 75-I

Response: NOAA and EPA recognize the importance of riparian buffers along Oregon streams, including both small and medium fish-bearing streams and non-fish bearing streams. The federal agencies continue to find that Oregon's existing riparian management practices are not sufficient to protect water quality and designated uses from nonpoint source pollution related to forestry practices. The state still needs to adopt additional management measures to provide greater protection of forest riparian areas before NOAA and EPA can find that the state has fully satisfied its coastal nonpoint program requirements under CZARA.

NOAA and EPA revised the final findings document for Oregon's Coastal Nonpoint Program to include additional scientific information about the importance of riparian areas. As discussed in the findings document, riparian buffers play an important role in shading streams to maintain cold water needed for salmon. In the findings document, NOAA and EPA acknowledge that the Board of Forestry has been considering a rule change that would provide greater protections to small and medium fish bearing streams. This is an important step forward and NOAA and EPA encourage the state to complete the rulemaking expeditiously. NOAA and EPA also recognize that the rule change, if successful, will likely not address non-fish bearing streams and that the state also should protect riparian areas along these streams as well.

Comment [AC2]: May need to revise this statement based on final lang. in the decision doc.

Comment [PE3]: The current rationale seems more specific, "the same buffer requirements should apply to both stream types".

C. Forestry Riparian Management Accomplishments

Comment: Speaking to the accomplishments of Oregon's coastal nonpoint program as it relates to forestry-riparian management, some commenters emphasized their support for Oregon's existing rules and programs in place to manage the forest industry and maintain water quality and riparian protections. One commenter pointed out that Oregon's Department of Forestry works to strengthen forest rules for riparian protection but faces political challenges that require "thoughtful science". The commenter noted the importance of maintaining the forest industry's support for water quality protection and acknowledged this process will take longer than Spring 2014.

Another commenter, on behalf of various groups, noted that private landowners, foresters, and loggers all support the Oregon Forest Practices Act and believe there is a high level compliance with the rules. Another group called attention to Oregon's fifteen plus years of "superior voluntary riparian watershed enhancement accomplishments" by the forest sector. That group contends that EPA and NOAA's restrictions would "stifle these valuable watershed improvements." Lastly, another group noted how Oregon's Department of Forestry has been doing good work to improve water quality and riparian habitat.

Sources: 14-D, 77-AAA, 79-D, 82-B

Response: Currently Oregon relies on both regulatory and voluntary measures to provide riparian protections for fish bearing streams and non-fish bearing streams. While these practices are better than having no protections in place, as discussed more fully in the final findings document, the results of a number a studies show that Oregon's current riparian protection practices are not adequate not adequate to prevent sediment and temperature impacts to water quality and fully support beneficial uses. Having broad-based support for Oregon's Coastal Nonpoint Program, including from the forest industry, will help contribute to the program's success. A broad body of science supports the position that changes must be made to the state's existing forestry riparian practices to achieve and maintain water quality standards.

NOAA and EPA recognize the political challenges the state faces as it considers a change to the FPA rules to provide greater riparian protection of fish-bearing streams and the importance of good science to support a rule change. In order to support the state's decision making process, NOAA and EPA experts have reviewed the literature for quality and relevance and have testified in front of the Board of Forestry to ensure that the Board is aware of and understands key studies. Both agencies stand ready to continue to assist the state, as needed, as it moves forward with the rule change.

Although the federal agencies understand a rule change takes time, NOAA and EPA cannot further delay a final finding on Oregon's Coastal Nonpoint Program. NOAA and EPA have already provided Oregon sufficient time to develop a fully approvable coastal nonpoint program. Per a settlement agreement with the Northwest Environmental Advocates, the federal agencies must make a final finding by May 15, 2014, (subsequently extended to January 30, 2015, by mutual agreement of the settlement agreement parties), regarding whether or not Oregon has failed to submit an approved (without conditions) coastal nonpoint program. NOAA and EPA arrived at this timeline based on the original commitment Oregon made in a letter to NOAA and EPA dated July 26, 2010, that the state would address its remaining conditions by March 2013.

D. Adequacy of Forestry Riparian Management for Protecting Small, Medium Fish-Bearing Streams and Non Fish-Bearing Streams

Comment: Many commenters expressed the opinion that Oregon's existing riparian management practices and forestry laws are inadequate to protect small and medium fish-bearing and non-fish bearing streams. Commenters focused on the use of no-harvest buffers, noting that small and medium streams receive minimal buffering (i.e., 20 feet) and small non-fish streams receive no buffering (excepting equipment exclusion). One commenter reasoned that because riparian buffers are not required for small non-fish bearing streams, they become a source of sediment for connected fish-bearing channels thus compromising the effectiveness of the overall system of riparian management in maintaining sufficiently low turbidity.

Commenters stated that the Oregon Forest Practices Act and other comparable forest practices have been widely criticized for failing to protect water quality and salmonid habitat (and provided examples of such failures related to inadequate shade, poor large wood recruitment, lack of tributary protection, and unstable slopes). They also stated that Oregon's forestry riparian protection standards lag behind those of their neighboring states, such as Washington and California. Commenters pointed to the National Marine Fisheries Services' determination that the Oregon Forestry Practices Act does not have rules in place to adequately protect coho salmon habitat. Commenters believe that the FPA does not provide for the production and introduction of necessary large woody debris to medium, small, and non-fish bearing streams and that any required buffers under the rules are inadequate to prevent significant stream warming.

A white paper analyzing the proposed Oregon and California Railroad Grant Land Trust, Conservation, and Jobs Act was cited by one commenter as providing evidence of the need for more stringent programs to protect water quality in Oregon's coastal zone. A concern was raised that even where narrow buffer zones exist along river shores there are areas where those buffers have been eliminated. The claim was also made that the Board of Forestry has not shown any intent to provide riparian protection for non-fish bearing streams, which make up the majority of coastal stream miles and flow into fish bearing streams.

Comment [AC4]: Provide citation or link.

A commenter discussed how restoring and maintaining productive aquatic habitat does not appear to be a common stated objective of Oregon programs that influence the management and use of riparian areas. That commenter went on to say that riparian corridors, managed according to Oregon's rules, have been significantly degraded across large portions of the state's landscape. Other comments pointed to the RipStream study findings as evidence that the existing FPA buffers do not achieve compliance with water quality standards and the Clean Water Act.

Other comments focused on other weaknesses in Oregon's existing FPA rules. For example, the rules do not protect non-perennial (intermittent) streams, which are determined "by the State Forester based on a reasonable expectation that the stream will not have summer surface flow after July 15." The commenter also raised issue with the lack of required riparian management for seeps and springs.

A few commenters believe Oregon's existing Forest Practices Act and rules, combined with its voluntary efforts, are adequate to protect forest riparian areas. One commenter stated the Forest Practices Act and rules do provide the minimum requirement for developing large mature trees that can contribute woody debris to streams. They also asserted that voluntary efforts, such as discretionary placement of additional wood in the stream, help to further create large wood debris habitat that salmon need. In addition, they discussed other new voluntary practices that are being implemented among the forest

industry, such as the retention of additional leave trees in near-stream areas, and targeted restoration of high-priority riparian areas that are lacking woody debris.

These commenters cited results from several recent Watershed Research Cooperative (WRC) studies to support their position that Oregon's existing forest riparian management is adequate. For example, they state that that two of the three WRC studies indicate a positive fish response following timber harvest. They also note that the Hinkle Creek WRC study found that small debris provides shade to non-fish bearing streams.

In addition, a couple of commenters criticized NOAA and EPA for relying on much older studies, such as ODF's 1999 RipStream study and the 2002 ODF and DEQ Sufficiency Analysis, to support the federal agencies' claim that Oregon needs greater protection of its small and medium fish-bearing streams and non-fish bearing streams. They stated NOAA and EPA should have considered newer, more relevant research, such as the WRC studies. In addition, one commenter felt NOAA and EPA misinterpreted the RipStream study findings. They believe NOAA and EPA's description of the study's findings on page 8 in the proposed findings document did not align with the actual conclusions of the report.

One commenter also reflected that the criticism of the existing FPA rules should be tempered against the evolving science and understanding of forest riparian management. They cite how former beliefs that stream cleaning (large wood removal) was needed to improve instream fish habitat and increase dissolved oxygen, has now evolved to an understanding that large woody debris is needed to achieve these goals. In addition, the commenter states that while there used to be an emphasis on retaining large conifers along streams, that thinking has now shifted to reflect a new understanding of the benefits of riparian hardwoods and the importance of diversity in tree species within the riparian zone.

Sources: 15-G-2, 28-B-1, 30-K-1, 43-BBB, 55-P, 56-D-2, 56-E-1, 56-E-2, 56-E-3, 57-AAA, 57-BBB, 58-E-2, 58-H-1, 58-H-3, 58-H-4, 58-H-5, 67-D1, 67-D-2, 75-H, 77-H. 77-I, 77-BBB, 77-CCC, 77-DDD, 79-E, 79-G

Response: NOAA and EPA continue to find that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. As discussed in more detail in the final findings document for Oregon's Coastal Nonpoint Program, there is a wealth of science, including the 2011 RipStream study, that shows that Oregon's existing FPA riparian protection practices on private forest lands in the Oregon Coast Range, are not sufficient for meeting the cold water protection criteria for the state's temperature water quality standard.

The EPA and NOAA appreciate the effort that has gone into conducting the paired watershed studies under the WRC. However, because the WRC results are preliminary and have not yet gone through a robust peer review process, the federal agencies do not believe they are appropriate to reference at this time. Further, as NOAA and EPA discuss more fully in the final findings document, NOAA and EPA's review of the WRC studies found that the variation in stream temperature and the net decrease in stream temperature observed by the WRC studies downstream of harvest sites may be attributable to factors outside of the scope of those studies (such as increased slash debris along the stream after harvest and increased stream flow post-harvest). DEQ also evaluated the WRC study results and concluded that the stream temperature responses observed downstream of the Hinkle Creek and Alsea River harvest sites are similar to the downstream temperature responses observed under the RipStream study. Therefore, as stated in the final decision document, there may be other factors at play that make it difficult to draw any definitive conclusions about the adequacy of the FPA practices from the WRC paired watershed study results.

NOAA and EPA do not believe the federal agencies have misinterpreted the RipStream study in the proposed findings document. In the proposed findings, NOAA and EPA stated,

> "A significant body of science, including: 1) the Oregon Department of Forestry's (ODF) Riparian and Stream Temperature Effectiveness Monitoring Project (RipStream)…continues to document the need for greater riparian protection around small and medium streams and non-fish bearing streams in Oregon. In its July 1, 2013, submission to the federal agencies, Oregon cited the RipStream study and acknowledged that there was evidence that forest practices conducted under the State's existing Forest Practices Act (FPA) rules do not ensure forest operations meet the State water quality standards for protecting cold water in small and medium fish bearing streams."

While NOAA and EPA did not specify which RipStream study they were referring to in the body of the proposed findings, the References section at the end of the document does provide the full citation for the three RipStream studies, one published in 2008 and two published in 2011. These RipStream studies assessed how the FPA's existing riparian protection practices affected stream temperature. In their RipStream publication, Groom et. al. (2011a) found that there was a "40.1% probability that a preharvest to postharvest comparison of 2 years of data will detect a temperature increase of >0.3 ºC". The state's stream temperature anti-gradation standard says that water temperatures cannot increase more than 0.3 ºC. Therefore, the researchers concluded that "[stream temperature] anti-degradation [standard] compliance may be a problem on private forestry lands in the Oregon Coast Range."[3]

The statements NOAA and EPA made in the proposed findings document about the RipStream study align with this conclusion. To address any apparent confusion regarding the federal agencies' interpretation of the RipStream study, NOAA and EPA have revised the final findings for Oregon's Coastal Nonpoint Program to further clarify the discussion of the RipStream study to include an in-text citations for the RipStream studies and provide a more in-depth discussion of the study's results.

NOAA and EPA agree that the science around riparian buffer protection is evolving. NOAA and EPA continue to welcome and support scientifically rigorous studies to evaluate the effectiveness of forest practices designed to protect water quality and designated uses. The federal agencies are also committed to investigating alternative approaches that will provide greater protection, when warranted. The fact that science will continue to evolve should not prevent Oregon from taking action to provide better riparian protection when the current science clearly shows that the state's existing FPA practices are not meeting the protection of cold water criterion for the temperature standard. Employing a nimble adaptive management approach that allows the state to make adjustments and to identify when additional management measures are needed based on current science, is a core component of a state's coastal nonpoint program (See Section 6217(b)).

As a few commenters noted, Oregon's riparian protection standards for small and medium fish-bearing streams and non-fish bearing streams are not as strong as those for neighboring states like Washington and California. CZARA gives states the flexibility to develop a program that best meets their unique needs. Therefore, while Oregon does not have to adopt the same standards as its neighbors, NOAA and EPA encourage Oregon to look to Washington and California as potential models for the types of riparian protection practices it may wish to consider. These practices have already been instituted by

[3] Groom, J.D., L. Dent, and L.J. Madsen. 2011. Stream temperature change detection for state and private forests in the Oregon Coast Range. Water Resources Research 47: W01501, doi:10.1029/2009WR009061.

the forest industry in Washington and California which have had to contend with similar topographies, weather conditions, and sensitive species.

Finally, NOAA and EPA note that one commenter expressed concern that in some areas, even Oregon's current FPA buffer requirements were not being followed. While that may be the case, that is an enforcement issue. Under CZARA, how well a state is enforcing its existing policies and programs is not considered for coastal nonpoint program approval. (See the response to Section VI.C, Enforcement, for a fuller explanation).

E. Greater Protection of Forestry Riparian Areas Needed

Comment: Several commenters stated that Oregon needs to provide greater protection for forest riparian areas along both fish and non-fish bearing streams. One commenter provided several examples of recommended buffer widths that the state may wish to adopt. For example, they mentioned that NMFS recommends no-cut riparian buffers ranging from 150-300 feet in width to protect salmonids. The larger buffer widths are for fish-bearing streams, while the smaller widths are more suitable for non-fish bearing streams. The commenter also stated the Northwest Forest Plan recommends similar buffer widths (300 foot no-cut buffers along fish-bearing streams and 150 foot no-cut buffers along non-fish bearing streams). The commenters stated that wider riparian buffers would ensure large wood recruitment, improve sediment and pesticide filtration, and provide sufficient tree basal area within the riparian zone to shade streams and protect cold water needed for salmon. As one commenter also asserted, the larger buffers would also provide greater protection from blow downs and ensure that if a few trees are blown down, enough would remain to still provide a functioning buffer.

In addition to greater protection of forestry riparian areas, commenters stated that riparian restoration was needed. They highlighted the important role large downed trees, or nurse trees, play in forest regeneration.

One commenter did express concern with adopting riparian buffers similar to the Northwest Forest Plan. They stated that when the Bureau of Land Management adopted the plan's buffers, it limited the amount of timber that could be harvested. The new buffer requirements necessitated three landings and two more harvest units to harvest the same amount of timber that used to be done with one landing. The commenter concluded that more restrictive riparian buffers can lead to greater ground disturbance.

Sources: 20-B-1, 30-K-1, 48-I, 55-N, 56-E, 56-E-1, 56-E-2, 57-E-3, 58-E-4

Response: NOAA and EPA agree that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. In the final findings document, the federal agencies acknowledge the Board of Forestry's ongoing rulemaking process that is considering improvements to the FPA riparian protections for small and medium fish-bearing streams. This rule may help the state provide some of the protection needed. NOAA and EPA encourage the state to complete those rule changes as expeditiously as possible.

NOAA and EPA appreciate the recommended buffer widths commenters provided and will be sure to share these suggestions with the state for its consideration. CZARA does not require states to adopt specific buffer widths to have a fully approved coastal nonpoint program. Rather, the state has the flexibility to identify the type of buffer protection that works for them yet still will enable them to achieve and maintain water quality standards. NOAA and EPA continue to work with Oregon to make sure the state has a good programs and processes in place to provide the riparian protection needed.

With regard to the comment about greater ground disturbance resulting from the application of Northwest Forest Plan buffers, NOAA and EPA refer to the most recent report by the Northwest Forest Plan Aquatic Riparian Effectiveness Monitoring Program.[4] That report finds that 69 percent of watersheds are demonstrating a positive change in condition, and that almost all negative watershed condition scores within the Plan area are associated with fire (not harvest).

Finally, EPA and NOAA are supportive of Oregon's efforts under the Oregon Watershed Enhancement Board and other programs to restore forested riparian areas through voluntary activities and other means. The federal agencies believe these voluntary measures will complement and augment a fully approvable coastal nonpoint program.

F. Impacts of Strict Forestry Riparian Protection

Comment: A couple of commenters expressed concern about the impacts stricter riparian management would have on forestry operations. One commenter felt requirements for larger riparian buffer widths would only hurt the logging industry and drive up the price of lumber. Another commenter stated that any EPA and NOAA-proposed restrictions would limit the ability of private forest landowners to invest in watershed restoration efforts, including enhancements to forestry riparian areas. They felt additional restrictions would smother the forest sector's cooperative stewardship ethic and long history of voluntarily adopting good riparian management and other forest stewardship practices.

Sources: 20-B, 79-D, 79-F

Response: NOAA and EPA recognize that wider no-cut riparian buffer requirements and strengthening other riparian management practices may slightly reduce the number of harvestable trees available to the timber industry in Oregon. However, many of the timber companies currently operating in Oregon are also successfully operating in Washington and California—states that have stronger riparian protection requirements in place. The timber industry in those states is complying with those riparian protection requirements, and in some cases exceeding those requirements by adopting additional voluntary practices and working with partners on watershed restoration activities.

Therefore, NOAA and EPA do not believe increasing buffer requirements within Oregon's coastal nonpoint management area will have a significant impact to the forestry industry in Oregon. Also, with more robust riparian protections in place, water quality would be protected before damage occurs that would necessitate restoration. As a result, industry may be able to spend less on watershed restoration efforts, since it is typically more cost-effective to protect an area than to restore a degraded one.

G. Flexibility for Forestry Riparian Management Needed, Including Use of Voluntary, Incentive-Based Approaches

Comment: Rather than relying on strict regulatory approaches to better protect riparian areas on forest land, a few commenters advocated for more flexible, voluntary, and incentive-based approaches. The commenters recognized more could be done to protect riparian buffers, and thus water quality, salmon and other designated uses. However, they felt additional incentive-based approaches, combined with the existing Forest Practices Act rules, would be the best way to provide these additional protections and facilitate long-term wood recruitment and shade to support high-quality salmon habitat. Voluntary

[4] Lanigan, Steven H.; Gordon, Sean N.; Eldred, Peter; Isley, Mark; Wilcox, Steve; Moyer, Chris; Andersen, Heidi. 2012. Northwest Forest Plan-the first 15 years (1994-2008): watershed condition status and trend. Gen. Tech. Rep. PNW-GTR-856. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 155 p.

practices they recommended included the retention of additional leave trees near fish-bearing streams, the placement of large woody debris in streams, planting trees and other riparian restoration activities, and thinning riparian forests to levels that promote primary production in streams and the adjacent understory (primary production being important for salmon populations).

Sources: 75-F, 77-CCC, 79-D, 79-F

Response: NOAA and EPA understand and respect the need for states to be able to use flexible approaches in developing and implementing their coastal nonpoint programs. CZARA requires management measures to be backed by enforceable authorities. As NOAA and EPA describe in the *1998 Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance for Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990,*[5] this can either be through direct enforcement authority or through voluntary efforts, backed by enforceable authorities. If states chose a voluntary approach, as the guidance outlines, that states not only must provide a description of their voluntary programs but also meet other requirements including: (1) providing a legal opinion asserting they have suitable back-up authorities and demonstrating a commitment to use the back-up authority, when necessary; and (2) have program in place to monitor and track implementation of the voluntary program. Voluntary programs could play an important role in Oregon's Coastal Nonpoint Program, however, the state has not fully described its voluntary programs for forestry riparian protection or satisfied the other requirements needed to use voluntary programs to meet part of their CZARA 6217(g) management measure requirements.

H. Forestry Landslide Management

Comment: Some commenters acknowledged that landslides caused by logging practices, such as clear cutting on steep slopes, are a real problem in Oregon and additional management measures are necessary to address these impacts. It was noted that Oregon does not have sufficient programs to reduce landslide risk and control nonpoint pollution due to logging on private lands.

Others expressed their disagreement with the federal agencies' proposed finding and argued that the evidence provided by the federal entities was misleading, only focusing on "landslide density relationships" rather than considering the "total number of landslides triggered during major storms". If consider the latter, one would see that the "potential increases in sediment delivery to public resources from landslides...is proportionally small". It was recommended that EPA consider a broader scale view over longer timeframes to evaluate whether water quality and designated uses are impaired. In addition, it was argued that EPA has not offered objective evidence that additional management measures are needed to maintain water quality; the federal agencies have not produced any evidence that landslides resulting from forest management activities have caused exceedances in water quality or negatively impacted aquatic life.

Source: 61-A, 63-B, 67-B, 77-J, 77-K, 77-L

Response: NOAA and EPA continue to find that Oregon needs to do more to protect high-risk landslide areas from logging activities to ensure water quality and designated uses are not impaired. Based on the comments received, NOAA and EPA have revised the rationale in the final findings document to provide more specific scientific evidence to show the link between timber harvesting and landslide risk and how landslides increase sediment loads to nearby streams.

[5] http://coastalmanagement.noaa.gov/nonpoint/docs/6217adminchanges.pdf

NOAA and EPA disagree that a wider landscape-scale approach to assessing landslide impacts would be appropriate. While the effects of a single landslide may be diluted when a landscape scale view is taken, the impact to a specific stream reach (or reaches), and the designated uses of that stream, are real and can be significant. It is still important to capture and consider these impacts when planning harvest activities so that landslide risks that can impair waterbodies can be minimized.